

BEST COPY

AVAILABLE

COLL-25

14 Jul 1958

MEMORANDUM FOR: Assistant Director/GER

SUBJECT : A Theory on Submerged Position Indicators

REFERENCE : AD/GER Memorandum of 14 May 58 to DD/I, copy to AD/SI, same subject

25X1A9a 1. We concur that the paper prepared by [REDACTED] of GER concerning possible Soviet use of submerged position indicators (SPI) is worthy of consideration. The concept is attractive in that it might provide a simple, inexpensive solution to an enormously difficult navigation problem. In the past Soviet weapons have been notable for simplicity of design.

2. As evidence of the fact that at least the broad idea of acoustic buoys for position fixing has occurred in Soviet circles, we can cite the reported development in East Germany of a submersible buoy. According to the reports, a series of such buoys would pop to the surface in response to a particular signal to mark a channel through a mine field. Also, though less directly related, we have reports that the Soviet oceanographic survey ship Mikhail Lomonosov is equipped with an acoustic buoy for use in survey work.

25X1A9a 3. We have the following comments on the system suggested by [REDACTED]

a. We believe that the buoys would have to be designed for operation at depths greater than 100 feet because the 100 fathom curve off the East Coast of America seems too close to shore for a missile launching site. It is about 120 miles off shore off New York, about 70 off shore in the latitude of Washington and even less further South. The risk of detection this close to the continent seems unsatisfactorily large. Furthermore, sound propagation and noise levels are less favorable in shallower waters.

b. The proposed system seems to visualize a single SPI unit per launching site. This would require that the submarine determine its distance from the unit by an accurate knowledge of the signal level at various distances from the source. We suggest that an alternative system would be the use of two or more units per site, each with a distinctive coded signal, so that the submarine might find its position by triangulation.

BEST COPY

AVAILABLE

~~SECRET~~

SUBJECT: A Theory on Submerged Position Indicators

c. In the interests of security and to prevent the possible long-range transmission of the SPI signals in the Sonar channel, we believe these units would be designed with a relatively high frequency output and that the power output would be adjusted so that the signal would be completely attenuated at a distance from the unit approximately equal to the accuracy with which it is estimated that the submarine, after a long period of submerged running, could navigate.

d. We also note that, at least in an initial attack, the submarine might be able to use the US coastal LORAN radio navigation system to assist it in reaching and locating the SPI units.

e. The problem of providing a power source for these units may be critical. Though they would be infrequently actuated, they would be required to last for matters of years. Though they would be essentially short range units, the power requirements for that range are apt to be surprisingly high because of the high frequency to be used.

4. The foregoing considerations suggest the following possible intelligence indicators of such activity other than those mentioned by [REDACTED]

a. Soviet research and development in the field of the propagation of sound in sea water particularly in the high frequency range.

b. Soviet research and development of omnidirectional sound pulse transducers.

c. Soviet manufacture of steel objects very roughly estimated to have the volume of a 50 gallon drum but made of thick steel plates, and giving the impression in all its fittings of being suitable for deep submergence.

d. Evidence of receivers for US LORAN radio navigation of Soviet submarines.

e. Evidence of interest by Soviet Sonar scientists in long-life batteries.

[REDACTED]
Assistant Director
Scientific Intelligence

25X1A9a